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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,140

09/25/2006

Seong-Ho Han

1455-062823

7077

28289 7590 02/10/2009

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EXAMINER

SHEVIN, MARK L

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

02/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,140	Applicant(s) HAN ET AL.	
	Examiner Mark L. Shevin	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 45-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/23/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status and Election

1. Claims 1-52, filed as a preliminary amendment on September 25th, 2006, are pending. Claims 45-52 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant's election with traverse of Group I, claims 1-44 in the reply filed on November 24th, 2008, is acknowledged. The traversal is on the ground(s) that Tosaka does not teach the Nb/C ratio of 0.3-0.7. This is not found persuasive because with respect to the compositional formula $Nb/C = 0.3-0.7$, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.* 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Tosaka.

The requirement is still deemed proper and is therefore made FINAL.

Priority

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2. Applicants' claim to foreign priority of Korea Patent Applications 10-2004-0103610 and 10-2004-0020204, filed December 9th, 2004 and March 25th, 2004, respectively have been recorded.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted October 23rd, 2007 in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner. Please refer to applicants' copy of the 1449 form submitted herewith.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Joint Inventors

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a

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later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 1-2, 4, 10, 11, 13, 19, 21, 23, 24, 26, 32, 33, 35, 41, 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tosaka** (JP 10-130733 A1 – Full human translation) in view of **Senuma** (JP 06-017140 – Machine Translation).

Tosaka:

Tosaka, drawn to method of manufacturing a bake-hardenable steel sheet, discloses a composition for the steel as shown in the comparative table below:

Element	Claim 1	Tosaka	Overlap
C	0.0016 – 0.01	0 – 0.01	0.016 – 0.01
Si	0 – 0.1	0 – 0.1	0 – 0.1
Mn	0.2 – 1.5	0 - 1.5	0.2 – 1.5
P	0.05 – 0.15	0 – 0.2	0.05 – 0.15
S	0 – 0.01	0 – 0.01	0 – 0.01
Al	0.08-0.5	0.03 – 0.15	0.08 – 0.15
N	0 – 0.0025	0 – 0.0040	0 – 0.0025
Nb	0.003 – 0.1	0.003-0.04	0.003 – 0.04
Mo	0.01 – 0.4	0.01-0.2	0.01 – 0.2
B	0.0005-0.005	0.0002 – 0.002	0.0005 – 0.002
Ti	0 – 0.003	opt 0.003 – 0.04	0 / 0.003

Fe	Balance	Balance	Balance
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Tosaka teaches that the steel stock slab should be heated beyond the Ac_3 point, specifically between 1050 and 1300 °C and then hot rolled with a finishing temperature between 800 and 950 °C (para 0024). The sheet is then cooled (para 0025), cold-rolled (para 0030), and annealed (Abstract and para 0027). Thus, compared to claim 1, Tosaka teaches a rolled steel sheet of an overlapping composition and produced by a substantially identical process as reflected in instant claim 45 (withdrawn as non-elected.).

The steel forms AlN precipitates (claim 5) and the atomic ratio of Nb to C should be less than 0.8, preferably less than 0.75 (para 0020).

Tosaka does not explicitly disclose the grain size as ASTM No. 9 or more, AlN precipitates having an average size of 20 microns or less, or NbC precipitates having an average size of 30 nm or less.

Senuma:

Senuma, drawn to a cold-rolled steel sheet, discloses a steel with overlapping ranges of C, N, P, S, Al, Ti, Nb, Mn, Mo, and Fe (Abstract, claims 1-2) produces steel sheets with ASTM grain size numbers above 9 as shown in Table 3. The sheet is rolled above the Ar_3 point, coiled, cold rolled, and annealed per the process of instant claim 45 and a substantially similar manner as Tosaka.

Regarding claims 1, 2, 10, 11 it would have been obvious to one of ordinary skill in steel metallurgy, at the time of the invention, to choose the

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instantly claimed steel composition ranges through process optimization as Tosaka discloses a steel with overlapping concentrations of alloying elements with a similar utility in cold-rolled bake-hardenable steel sheet and it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists." One would be motivated to produce grains in the Tosaka alloy with an ASTM grain size above 9 as Senuma showed that a substantially similar alloy processed by a substantially similar method resulted in ASTM grain sizes above 9.

Furthermore, one of ordinary skill would have reasonably expected fine AlN precipitates to form in the alloy of Tosaka as Tosaka had substantially similar composition processed by a substantially similar thermomechanical method. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

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Lastly, with respect to the compositional formula $Nb/C = 0.3-0.7$, Tosaka taught that atomic ratio of Nb to C should be less than 0.8, preferably less than 0.75 (para 0020) and that it is a result effective variable in obtained the desired level of bake hardenability. Moreover, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357,553 O.G. 177., 57 USPQ 1 17, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. *In re Austin, et al.* 149 USPQ 685,688. It would have been obvious to one of ordinary skill in the art to select alloy compositions fulfilling the claimed compositional relationships from the alloy compositional ranges disclosed by Tosaka.

Regarding claims 4, 13, 26, 35, although Tosaka and Senuma are silent as to the size of the AlN precipitates, one of ordinary skill would reasonably expect such precipitates to form during the processing method of Tosaka in view of Senuma as the starting steel alloy is substantially the same as is the thermomechanical method as compared with instant claim 45. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Regarding claims 19 and 21, it would have been obvious to one of ordinary skill in steel metallurgy, at the time of the invention, to choose the instantly claimed steel composition ranges through process optimization as Tosaka discloses a steel with overlapping concentrations of alloying elements with a similar utility in cold-rolled bake-hardenable steel sheet and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists." One would be motivated to produce grains in the Tosaka alloy with an ASTM grain size above 9 as Senuma showed that a substantially similar alloy processed by a substantially similar method resulted in ASTM grain sizes above 9.

Furthermore, one of ordinary skill would have reasonably expected fine AlN precipitates to form in the alloy of Tosaka as Tosaka had substantially similar composition processed by a substantially similar thermomechanical method. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing

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that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

With respect to the bake hardening value, aging index, ductile to brittle transition temperature, and tensile strength, one of ordinary skill would have reasonably expected the alloy of Tosaka in view of Senuma to possess these properties as Tosaka had substantially similar composition processed by a substantially similar thermomechanical method. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding claims 23, 32, 35, 41, and 43, it would have been obvious to one of ordinary skill in steel metallurgy, at the time of the invention, to choose the instantly claimed steel composition ranges through process optimization as Tosaka discloses a steel with overlapping concentrations of alloying elements with a similar utility in cold-rolled bake-hardenable steel sheet and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by

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the prior art" a *prima facie* case of obviousness exists." One would be motivated to produce grains in the Tosaka alloy with an ASTM grain size above 9 as Senuma showed that a substantially similar alloy processed by a substantially similar method resulted in ASTM grain sizes above 9.

Furthermore, one of ordinary skill would have reasonably expected fine AlN precipitates to form in the alloy of Tosaka as Tosaka had substantially similar composition processed by a substantially similar thermomechanical method. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

With respect to the bake hardening value, aging index, ductile to brittle transition temperature, and tensile strength, one of ordinary skill would have reasonably expected the alloy of Tosaka in view of Senuma to possess these properties as Tosaka had substantially similar composition processed by a substantially similar thermomechanical method. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d

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1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

With respect to the steel sheet being hot-dipped, Tosaka taught (para 0036) that his invention is applicable to hot-dip zinc coated sheet which one would be motivated to use in view of the well-known increase in corrosion resistance imparted by hot-dip coatings.

5. **Claims 6, 8, 15, 17, 28, 30, 37, and 39** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tosaka** in view of **Senuma** as applied to claims 1-2, 4, 10, 11, 13, 19, 21, 23, 24, 26, 32, 33, 41, 43 above, in further view of **Takahashi** (JP 2003-253378).

The disclosures of Tosaka and Senuma were discussed above, however neither reference taught the size of the NbC precipitates.

Takahashi:

Takahashi, drawn to a thin steel sheet with an overlapping range of C, N, Si, Mn, P, S, Al, Ti, Nb, and Fe, teaches crystal grains have been kept small in the prior art using a fine dispersion of NbC precipitates (para 0005) and that such precipitates in his thin steel sheet should be 1-10 nm in diameter (claim 1, para 0007) so as to trap C or N but not to overly disperse strengthen the matrix alloy (para 0012).

Regarding claims 6, 8, 15, 17, 28, 30, 37, and 39, it would have been obvious to one of ordinary skill steel metallurgy, at the time of the invention, to

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choose the instantly claimed NbC particle size through process optimization to trap C and N values as Takahashi discloses a steel with overlapping concentrations of alloying elements with a similar utility in cold-rolled bake-hardenable steel sheet and it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

6. **Claims 3, 5, 12, 14, 20, 22, 25, 27, 34, 36, 42, 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tosaka** in view of **Senuma** as applied to claims 6, 8, 15, 17, 28, 30, 37, and 39 above, in further view of **Okuda** (JP 11-199991).

The disclosures of Tasaka and Senuma were discussed above, however neither reference taught the amount of solute carbon.

Okuda:

Okuda, drawn to a steel sheet with high bake hardenability (Abstract), discloses a steel alloy with overlapping ranges of C, Si, Mn, P,S, Al, N, and Fe when compared to Tosaka, and Senuma (Abstract, claims 1-3).

Okuda taught that about 5-15 ppm of C dissolves in the steel matrix and is a result effective variable in achieving good bake hardening.

Regarding claim 3, 12, 20, 22, 25, 34, 42, and 44, it would have been obvious to one of ordinary skill steel metallurgy, at the time of the invention, to

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choose the instantly claimed C solute carbon range through process optimization. Okuda discloses a steel with overlapping concentrations of alloying elements with a similar utility in cold-rolled bake-hardenable steel sheet and it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

Regarding claims 5, 14, 27, and 36, although Tosaka and Senuma are silent as to the size of the AlN precipitates, one of ordinary skill would reasonably expect such precipitates to form during the processing method of Tosaka in view of Senuma as the starting steel alloy is substantially the same as is the thermomechanical method as compared with instant claim 45. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

7. **Claims 7, 9, 14, 16, 18, 29, 31, 38, and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tosaka** in view of **Senuma** and **Okuda** as applied to claims 3, 5, 12, 14, 20, 22, 25, 27, 34, 36, 42, 44 above, in further view of **Takahashi** (JP 2003-253378).

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The disclosures of Tasaka, Senuma, and Okuda were discussed above, however none of the reference taught both the amount of solute carbon and size of the NbC precipitates.

Regarding claims 7, 9, 14, 16, 18, 29, 31, 38, and 40, it would have been obvious to one of ordinary skill steel metallurgy, at the time of the invention, to choose the instantly claimed NbC particle size through process optimization to increase bake hardenability as discloses a steel with overlapping concentrations of alloying elements with a similar utility in cold-rolled bake-hardenable steel sheet and it has been held that there the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. See In re Boesch, 205 USPQ 215 (CCPA 1980). MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists."

Conclusion

-- Claims 1-44 (All elected) are rejected
-- No claims are allowed

The rejections above rely on the references for all the teachings expressed in the text of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the texts of the references. To emphasize certain aspects of the prior art, only specific portions of the texts have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

All recited limitations in the instant claims have been met by the rejections as set forth above. Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any

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amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark L. Shevin/

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

February 1st, 2009
10-594,140